DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

BELO HORIZONTE ENVIRONMENTAL RESTORATION PROGRAM

(BR-0397)

LOAN PROPOSAL

This document was prepared by the project team consisting of: Hugo de Oliveira Project Team Leader; Teodoro Noel (RE1/EN1), Fabián Ordóñez (RE1/EN1), Maria Claudia Perazza (RE1/EN1), Claudia Nery (COF/CBR), Patricio Naveas (COF/CBR), Valnora Leister (LEG/OPR); Mario Gallego (RE1/EN1) was in charge of document production.

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Plano Diretor de Esgotos de Belo Horizonte

Projeto Executivo do Sistema de Esgotos de Belo Horizonte

EXECUTION:

Manual de Ejecución del Programa

Plano de Gestão Ambiental

Plano de Compensação de Perdas e Relocalização de População

ABBREVIATIONS

ANC	Unaccounted water
COFIEX	Comissão de Financiamento Externo
COMAM	Conselho Municipal de Meio Ambiente
COMPUR	Conselho Municipal de Política Urbana
COMUSA	Conselho Municipal de Saneamento
COPASA	Companhia de Saneamento do Estado de Minas Gerais
DAP	Willingness to pay
EIA	Environmental Impact Assessment
ETE	Estação de Tratamento de Esgoto
IDB	Inter-American Development Bank
IGP	Índice Geral de Preços
IPTU	Imposto Predial e Territorial Urbano
ISA	Índice de Salubridade Ambiental
LI	Licença de Instalação
LO	Licença de Operação
LP	Licença Prévia
PCA	Plano de Controle Ambiental
PDR	Plano de Desapropriação e Reassentamento de Famílias e Negócios
PG	Plano de Gestão
PGAS	Plano de Gestão Ambiental e Social
PIC	Public Information Center
MBH	Município de Belo Horizonte
PEU	Project Executing Agency
PP	Orçamento Participativo
PTI	Poverty Targeted Investments
RAA	Relatório de Avaliação Ambiental
RIMA	Relatório de Impacto do Meio Ambiente
SCOMF	Secretaria Municipal de Coordenação e Finanças
SCOMURBE	Secretaria Municipal de Coordenação de Política Urbana e Ambiental
SIMOP	Simulador de Obras Públicas
SLU	Secretaria de Limpeza Urbana
SMMAS	Secretaria Municipal do Meio Ambiente e Saneamento
STN	Secretaria do Tesouro Nacional
SUDECAP	Superintendência de Desenvolvimento da Capital
URBEL	Companhia Urbanizadora de Belo Horizonte

INTERAMERICAN DEVELOPMENT BANK
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IDB LOANS

APPROVED AS OF APRIL 30, 2004

	US$Thousand	Percent
TOTAL APPROVED	**25,650,894**	
DISBURSED	22,081,489	86.08 %
UNDISBURSED BALANCE	3,569,406	13.91 %
CANCELATIONS	1,650,439	6.43 %
PRINCIPAL COLLECTED	9,907,255	38.62 %
APPROVED BY FUND		
ORDINARY CAPITAL	23,961,740	93.41 %
FUND FOR SPECIAL OPERATIONS	1,557,980	6.07 %
OTHER FUNDS	131,175	0.51 %
OUSTANDING DEBT BALANCE	**12,174,233**	
ORDINARY CAPITAL	11,819,687	97.08 %
FUND FOR SPECIAL OPERATIONS	354,250	2.90 %
OTHER FUNDS	297	0.00 %
APPROVED BY SECTOR		
AGRICULTURE AND FISHERY	1,026,993	4.00 %
INDUSTRY, TOURISM, SCIENCE AND TECHNOLOGY	6,322,246	24.64 %
ENERGY	2,547,679	9.93 %
TRANSPORTATION AND COMMUNICATIONS	4,061,537	15.83 %
EDUCATION	789,662	3.07 %
HEALTH AND SANITATION	3,181,485	12.40 %
ENVIRONMENT	660,722	2.57 %
URBAN DEVELOPMENT	2,633,484	10.26 %
SOCIAL INVESTMENT AND MICROENTERPRISE	2,948,945	11.49 %
REFORM AND PUBLIC SECTOR MODERNIZATION	1,033,375	4.02 %
EXPORT FINANCING	294,977	1.14 %
PREINVESTMENT AND OTHER	99,789	0.38 %

* Net of cancellations with monetary adjustments and export financing loan collections.

INTERAMERICAN DEVELOPMENT BANK
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BRAZIL

STATUS OF LOANS IN EXECUTION

AS OF APRIL 30, 2004

(Amount in US$ thousands)

APPROVAL PERIOD	NUMBER OF LOANS	AMOUNT APPROVED*	AMOUNT DISBURSED	% DISBURSED
REGULAR PROGRAM				
Before 1998	19	3,953,267	3,192,533	80.76 %
1998 - 1999	11	1,425,000	391,177	27.45 %
2000 - 2001	10	1,022,826	274,569	26.84 %
2002 - 2003	12	910,800	96,655	10.61 %
2004	1	77,003	0	0.00 %
PRIVATE SECTOR				
2000 - 2001	2	66,100	39,103	59.16 %
2002 - 2003	2	68,900	25,285	36.70 %
2004	1	50,000	0	0.00 %
TOTAL	58	$7,573,896	$4,019,322	53.07 %

* Net of cancellations. Excludes export financing loans.

Inter-American Development Bank
Regional Operations Support Office
Operational Information Unit

Brazil

Tentative Lending Program

2004

Project Number	Project Name	IDB US$ Millions	Status
BR0375	Urban Transportation Curitiba II	80.0	APPROVED
*BR0411	Unibanco - Infrastructure Credit Facility	50.0	APPROVED
BR0372	São Paulo Fiscal Administration	20.0	APPROVED
*BR0402	Tele Norte Leste Bond Guarantee (Telemar)	75.0	
*BR1011	Brazilian Infrastructure Investment Fund (BIIF)	75.0	
*BR0370	Campos Novos Hydroelectric Power Project	75.0	
BR0397	San. and Env. Rehabilitation Belo Horizonte	42.5	
BR1009	São Paulo: Evaluation and Improvement of Social Policies	5.0	
BR0400	Sao Bernardo do Campo Urban Transportation	144.0	
BR0302	Fortaleza Urban Transport	85.2	
*BR1014	Construtora Norberto Odebrecht S.A.(CNO) Secured Corporate Bond	20.0	
BR0405	States and DF Administration Modernization I - PNAGE	93.0	
BR1001	Food and Agriculture Research	36.0	
BR0403	External Control Modernization Program States PROMOEX	38.6	
*BR0412	Braskem	75.0	
BR0358	Financing of PYMES - BNDES	1,000.0	
	Total - A : 16 Projects	**1,914.3**	
BR1005	Igarapes de Manaus Environmental-Social Prog.	140.0	
BR0392	Cadaster and Land Regularization Program	18.0	
BR1004	Support to BOLSA FAMILIA Program	1,000.0	
BR0318	Tourism Development South of Brazil (PRODETUR SUL)	200.0	
BR1010	Brazilian Infrastructure Investment Fund	300.0	
BR1006	Macambira Anicuns Urban Program	52.0	
*BR0395	Termonorte	59.2	
*BR0413	Ulbra University and Hospital Project	42.3	
*BR1007	Banespa Trade Finance Facility	50.0	
*BR1015	Coelba Investment Program	64.8	
	Total - B : 10 Projects	**1,926.3**	
	TOTAL 2004 : 26 Projects	**3,840.6**	

2005

Project Number	Project Name	IDB US$ Millions	Status
BR0396	Env. Rehab. of the Paraibuna River J. de Fora	19.3	
BR1008	BH Citizenship: Integrated Development Project	21.0	
BR1013	Ecotourism Development Mata Atlantica, S.Paulo	9.0	
BR0369	Sector Program	500.0	
BR0376	Environmental Improvement for Amapa	21.0	
BR0254	Florianopolis-Osorio Highway Moderniz.	322.0	
BR1012	Sustainable Development Semi-Arid in Sergipe	90.0	
BR0390	Porto Alegre Environmental Recovery	75.0	
BR1002	Espirito Santo State Highways	N/A	
BR1016	Competitiveness of Clusters São Paulo	10.0	
	Total - A : 10 Projects	**1,067.3**	
BR0339	Environmental National Fund Support Program 3	21.0	
	Total - B : 1 Projects	**21.0**	

TOTAL - 2005 : 11 Projects	**1,088.3**
Total Private Sector 2004 - 2005	**586.3**
Total Regular Program 2004 - 2005	**4,342.6**

*** Private Sector Project**

BELO HORIZONTE ENVIRONMENTAL RESTORATION PROGRAM

(BR-0397)

EXECUTIVE SUMMARY

Borrower:	Municipality of Belo Horizonte		
Guarantor:	The Federative Republic of Brazil for debt servicing payment obligations.		
Executing agency:	SCOMURBE		
Amount and source:	IDB: (OC)	US$	46.5 million
	Local:	US$	31.0 million
	Total:	US$	77.5 million
Financial terms and conditions:[1]	Amortization Period:	25	years
	Grace Period:	5	years
	Maximum Disbursement:	5	years
	Minimum Disbursement:	3	
	Interest Rate:		Libor-based
	Supervision and Inspection:	0.00	%
	Credit Fee:	0.25	%
	Currency:	U.S. dollars from the Single Currency Facility.	

Objectives: The purpose of the Program is to contribute to the improvement of the quality of life for the inhabitants of the Municipality of Belo Horizonte, through the integral restoration of local waterways. Specific objectives of the Program are: (i) reduce flooding risk; (ii) improve the quality of waterways; (iii) ensure the sustainability of urban improvements by consolidating drainage and urban environment management.

The proposed Program is a set of eight integrated projects, and will be executed in five years. Each project is made up of a set of activities within a secondary watershed of either the *Onça* or the

[1] The interest rate, credit fee, and inspection and supervision fee mentioned in this document are established pursuant to document FN-568-3 Rev. and may be changed by the Board of Executive Directors, taking into account the available background information, as well as the respective Finance Department recommendation. In no case will the credit fee exceed 0.75%, or the inspection and supervision fee exceed 1%.

Arrudas tributaries, both of which are a part of the Rio *das Velhas* watershed. The activities are defined as a function of the needs and intrinsic characteristics of each secondary watershed.

Description: The Program has three components:

Flood risks alleviation (US$ 45.3 million). For each secondary watershed, implementation of physical works devoted to increasing hydraulic control and reducing sedimentation in urban watersheds, as well as the recovery of natural water courses integrating the urban environment. Among such works are: (i) Drainage: waterway improvements, erosion and landslide control of river margins, specially protecting the natural conditions of approximately 37 km of streams; environmental protection, construction of 5 small dams for flood control, and construction of approximately 7.9 km of drainage collectors in secondary watersheds; (ii) Urban Roads: construction of approximately 27 km of roads parallel to protected streams, which will be integrated to the urban road system to facilitate access to solid waste collection currently disposed of illegally on the streams; (iii) Rehabilitation and protection of open spaces implement line-parks; green areas and public squares with equipment for public use; water spring protection; re-vegetation in the secondary watersheds of *Av. Maria Carmen Valladares* and *Piteiras*; and (iv) Involuntary resettlement of 1,365 families.

Waterway quality improvement (US$3.2 million). Implementation of sewerage works in each secondary watershed, including the installation of approximately 31.4 km of marginal interceptors, approximately 30.5 km of collection networks, and approximately 5,380 household connections. These works will allow collection of residual water that would then be incorporated to existing or future wastewater treatment facilities, which would in turn terminate direct discharges that currently pollute the water courses.

Improvement of municipal management in urban drainage and environment (US$2.8 million). Improve efficiency and effectiveness of existing drainage system and current environmental management procedures, through the following activities: (i) urban drainage management: implement a drainage service management and flood control system as part of an early alert and prevention scheme according to the Drainage Master Plan; for this purpose, equipment will be acquired to measure rainfalls and river flows; implement an urban drainage municipal management system; expand the urban drainage integrated

information system; and technological improvements and training for the SMEU; (ii) Socio-environmental management: implement an integrated geo-referenced information system for environmental management; expand water quality monitoring; community communication programs for those communities affected by the project and the rest of the Municipality; environmental sanitation and education program for those communities located in the project's area of influence, particularly those along the streams, to raise their awareness and change their habits regarding cleanliness in urban areas, solid waste recycling and sanitation, as well as concerning the value of rehabilitated areas; and training and technological update activities for the benefit of the SMMAS; (iii) integrated watershed management: training and capacity building to integrate the MBH to the *Rio das Velhas* Watershed Committee.

Relationship of the Project in the Bank's country and sector strategy:

The Bank's strategy for Brazil prioritizes the following four strategic areas: modernization of the State, competitiveness, poverty reduction, and environment. In the sanitation sector the Bank will continue its support on establishing regulatory frameworks to promote long term self-sustainability, widespread access to services, private sector participation, efficiency improvements in the delivery of services, and environmental protection. The proposed Program deals with the strategic areas of poverty reduction and environment. The Program helps to improve environmental and health conditions, through improvements in the potable water and sanitation services.

Coordination with other Official Development Finance Institutions

One of the principal multilateral financial agencies in the sanitation sector of Brazil is the World Bank. The portfolio of the World Bank for sanitation in Brazil for the last three decades is made-up of 18 projects covering investments for US$ 2.3 million. Four of those projects are currently under implementation, and are focused on three strategic themes: (i) institutional and regulatory reform; (ii) enlargement and improvement of sanitation services to the lowest-income segments of the population; and (iii) watershed management. In Minas Gerais there have been coordination meetings with the World Bank to jointly support the State in the implementation of its water resources policy.

Environmental/ social review:

The Program internalizes the socio-environmental dimension from its inception. The Program actions lead to rehabilitation and conservation of the environment, especially of water resources, which will benefit through investments directed at recovering the Belo Horizonte's waterways. The *Licença Ambiental Prévia* was awarded according to law and made effective on March 27th 2003.

The strategy of the Program's Social and Environmental Management Plan (PGAS) is to prevent, mitigate and compensate the negative impacts and optimize the positive impacts. The involuntary resettlement of 1,365 families may cause some negative social impacts in the communities. A Resettlement Plan was developed to mitigate such social impacts. The Plan was prepared with the participation of affected parties, and in accordance to Bank's policy OP-710. Several consultations/hearings were held with affected parties from August 2001 to July 2002. The Environmental Impact Assessment (EIA)/ *Relatório de Impacto do Meio Ambiente* (RIMA) was made available to the public in Belo Horizonte on June 30th 2003 and through the Bank's Public Information Center (PIC) on July 9th 2003. Resources required to implement the PGAS and the Resettlement Plan are included as part of the Program (¶ 2.8).

Benefits: The Program's main benefit is to eliminate or reduce damages to community, private and public infrastructure due to floods product of the intense rainfalls of greater frequency in Belo Horizonte. This improvement will lead to a better quality of life for the population, because it improves housing conditions in the areas of influence of the eight streams in the Program, and because it improves sanitary conditions due to better conduction of sewage to treatment plants. Other social benefits include the insertion of resettled population in the regular urban structure of the city and the creation of new recreation alternatives in unused areas in the secondary watersheds. It is expected that these direct benefits among the Program's beneficiaries will improve the population's environmental health index.

Risks: Unforeseen floods due to deficiencies in the planning and management of the urban drainage, and maintenance of the flood control structures of the waterways. This risk will be mitigated by implementing an urban drainage management model, based on the development of mathematical models and hydrological monitoring, as well as the technical training of MBH's technical staff. Reoccupation of the expropriated areas along the streams. This risk will be mitigated with the implementation of green areas with recreation infrastructure in areas freed next to the streams, and permanent social mobilization actions as well as environmental education activities. Inadequate solid waste disposal because of lack of participation and collaboration of residents. This risk will be mitigated with the implementation of specific sanitary and environmental education and social mobilization programs.

Special contractual clauses:

Conditions precedent to the first disbursement:

(i) Evidence that the PEU has been established and is operational (¶ 3.4);

(ii) Evidence that the *Conselho Municipal de Saneamento* COMUSA has been established (¶4.9);

(iii) Evidence that the Municipal Sanitation Fund has been established. (¶4.9)**;**

(iv) Evidence that cooperation agreements with COPASA, URBEL and SUDECAP have been implemented (¶3.6);

(v) Evidence that the public call to bid for the hiring of the specialized firm to support the PEU has been issued (¶3.4);

Other special execution conditions:

(i) To issue calls to bid for works, evidence must be presented that all tendering documents include: (a) measures to mitigate impacts, and environmental specifications included in the Program Execution Manual; and (b) specific requirements defined in the PCA approved by the environmental authority as a requisite to give the respective Installation License (¶3.15);

(ii) Prior to the adjudication to any contract for construction works, evidence that the Municipality holds legal ownership, rights of way and any other rights over land required for construction (¶3.10);

(iii) Prior to start execution of the first Program's work, evidence that both the specialized firm to assist the PEU (¶3.4) and the supervision firm have been hired (¶3.7);

(iv) Prior to initiating works in areas that require resettlements, evidence that the families have been effectively resettled and/or the affected owners have been compensated will be required (¶3.18);

(v) To issue calls to bid for works of the second group, evidence must be presented that the studies to develop the hydrological model have been contracted (¶3.5);

(vi) To issue calls to bid for works of the third group, evidence must be submitted that the hydrological model has been implemented (¶3.5).

Poverty-targeting and social equity

This operation qualifies as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (document AB-1704). This operation does not

classification:	qualify as a poverty targeted investment (PTI) (see ¶ 5.25).
Exceptions to Bank policy:	None
Procurement:	The Program's consulting services and works have been divided in three groups (Annex II), so as to calls for bids be made based on advances in the implementation of the hydrological model. The procurement of goods and the awarding of contracts for construction and consulting services will be carried out by MBH, through a Special Bidding Commission, and in conformity with Bank procedures stipulated in the loan contract. International competitive bidding will be required for the procurement of goods in amounts equal to or greater than US$ 350,000; for construction contracts in amounts equal to or greater than US$5,000,000; and for consulting services in amounts equal to or greater than US$200,000. These thresholds are consistent with those recommended for Brazil by the Bank's Procurement Unit.

I. FRAME OF REFERENCE

A. General

1.1 The City of Belo Horizonte is located in Southeast Brazil, covers a surface area of 330 km^2, and is divided into 9 administrative regions with a population of close to 2.2 million (IBGE – Census 2000). Like other Brazilian cities, Belo Horizonte experienced an accelerated growth during the last decades, mainly during the seventies, adopting an urban expansion model based upon the penetration of the principal valleys, gradually channeling existing waterways.

1.2 The hydrological network draining the Belo Horizonte Municipality is made of streams feeding the *das Velhas* River: the *Arrudas* watershed, to the South, houses the city center, and the *Da Onça* Stream, to the North, into which in turn flows the *Isidoro* creek. Approximately 50% of the 330km^2 that make up the municipality falls within the *Arrudas* watershed, while 48% falls within the *Da Onça* watershed. The remaining 2% drain directly to the *das Velhas* river.

B. Urban planning and urban drainage in Belo Horizonte

1.3 The City of Belo Horizonte, established in 1897, was conceived as the State capital but its urban planning did not take into account the regional hydrology. In consequence, from its establishment, the City has been subject to numerous floods, which resulted in the 1928 decision to restrain the *Arrudas* Stream as a measure to counter flooding. Yet, accelerated urban growth, deficiencies in instruments for planning and control of urban development, as well as a lack of financial resources, have resulted in the present deteriorated environmental and sanitary situation in the waterways that make up the Belo Horizonte hydrological network. This results from three main factors: deficiencies in the rainwater drainage system; direct discharge of domestic and industrial sewage; and the illegal disposal of solid waste.

1.4 In 1996 laws for the Belo Horizonte Urban Master Plan (PDDU) and Land Use were approved. These pieces of legislation establish basic criteria guiding municipal urban policy, and contain directives for public intervention in the city's urban structure. The created the Urban Policy Municipal Council, COMPUR, and the Urban Policy Municipal Conference; organizations for public participation in the evaluation and implementation of directives and rules of the Master Plan and the Land Use laws; through them, proposals to change directives and investment priorities to be incorporated when the law are brought up to date.[2]

1.5 Besides general urban structure and infrastructure system guidelines, specific instruments to deal with irregular settlements and low-income areas are included

[2] Following the Master Plan, the 1999 I Conference, proposed alterations to the urban development legislation approved in 2000; the II Conference, concluded in 2002, proposed changes that reflect the contents of the Statute of Cities legislation of 2001.

in the Urban Master Plan and the Land Use Law. Those involve the simplification of land sub-division, urbanization and property regularization with public participation, which favor the supply of low-income housing and access to housing for the poorest section of the population. The application of these rules has contributed to reducing unregulated housing in the city.

1.6 The current Urban Master Plan also defined the need to establish a drainage-planning instrument. The Drainage Master Plan –PDDU-, whose implementation started in 1999, is the main instrument of a new urban drainage management policy, which is aimed at reducing negative impacts of urbanization upon local waterways. A principal characteristic of the PDDU is the integration of several disciplines, among them: urban expansion planning, land use planning, water pollution management, solid waste collection, and the physical and geotechnical aspects. The Drainage Master Plan involves four phases: (i) a diagnosis of the existing system; (ii) a hydrological and water quality assessment, and drainage management using hydrodynamic modeling; (iii) prioritization of structural and non-structural interventions; and (iv) the optimization of operation using early warning systems to alert against sudden floods. The Municipality of Belo Horizonte (MBH) has completed the first, diagnostic, phase, including a complete inventory of streams and the definition of the principles for drainage planning to be integrated with other urban infrastructure sectors. The diagnosis will permit the identification of means to control problems caused by urban sprawl over the city's hydrological system. Subsequent phases are at a design stage, and part of the studies and actions required will be funded through the present operation.

1.7 As it concerns the management of watersheds shared by more than one Municipality, Belo Horizonte represents a conurbation with the Municipality of *Contagem* within the *Arrudas* Stream and the *Pampulha/Onça* watersheds. The State's legal framework for water resources management (Law 13199/99) highlights problems related to general pollution, and inadequate land use patterns, including the negative impacts of inadequate urban drainage. In this context, shared watersheds require the establishment of land use parameters that are coherent with drainage control policy, taking procedence over the jurisdiction of the separate municipalities. There are a number of options for the institutional control of drainage systems, among them: (i) legislation specific to each Municipality, made compatible according to criteria relating to the specific watershed; (ii) State level legislation that would establish patterns to be followed by the Municipalities in order to avoid transferring undesirable impacts; and (iii) use of both mechanisms. The *Das Velhas* River Watershed Committee, under whose jurisdiction the Belo Horizonte hydrological network belongs, was established in 2003, with the participation, among others, of the Municipalities that share the watershed and the Minas Gerais Sanitation Company (COPASA). A proposal is under review for a Watershed Plan, in which the program DRENURBS (Environmental Rehabilitation and Sanitation Program for the Valleys and Natural Bed Streams of Belo Horizonte) is included. Although institutional progress with the creation of the Commission has been significant,

the first of the above alternatives seems more likely at the time. Consolidated management mechanisms still require further development and regulation. The Urban Master Plans of both Municipalities both seek to harmonize land use directives, and promote the inclusion of neighboring municipalities with the common objective of improving water quality in the region. From the *Das Velhas* River Watershed Committee and the State, a Watershed Management Agency might emerge, with authority to enforce measures to manage the entire watershed and establish water quality and quantity standards to be applied by all concerned Municipalities.

1.8 Based on past studies, the MBH defined the DRENURBS program, emphasizing the conservation of waterways that still run over their natural beds. The program identified close to 200 km of natural bed waterways in 47 secondary watersheds. The overall DRENURBS program implementation horizon is 15 years.

1.9 The scope of the Program was based on a multi-criterion analysis using 14 relevant indicators to select secondary watersheds considered to be a priority in which Program activities would take place. Main indicators used for this purpose were: population density; flooding and erosion occurrence; sanitary and health conditions of local populations; people affected by flooding; condition of solid waste collection system; number of families to be subjected to resettlement. After applying these criteria, 47 secondary watersheds were listed in order of priority. The MBH has selected a group of eight priority secondary watersheds to include in the present Program, consistent with its financial capacity.

C. Sanitary infrastructure and waterways quality

1. Drainage System

1.10 There are close to 694 km of waterways in the area of Belo Horizonte; of these, 28.5% are constrained. Thus there are 496 km of streams and brooks over natural beds, of which over 135 km are in urban areas, while the rest are found in areas unfit for urbanization or in areas dedicated to preservation.

1.11 Most of the *Arrudas* Stream and its tributaries are channeled. The channeling process dates to the early urbanization of Belo Horizonte at the beginning of the 20th Century, when the section of the stream closest to the town, as well as the *Da Serra* creek, was channeled. Later, additional gulches in the same watershed were subject to channeling without concern to preserve natural waterways.

1.12 The *Da Onça* Stream was urbanized recently, and therefore, most of its creeks have not yet been channeled. Flooding is frequent in the small gulches that flow into the *Da Onça* Stream, particularly in the secondary watersheds where the gulches have been channeled and which are located in densely populated areas.

1.13 The seriousness of the flooding effects can be measured by analyzing records from the Civil Defense Municipal Coodinator of Belo Horizonte. For January

1991, the records show 709 events of damage associated with rain, 112 events of flooding in local residences, and 102 landslides. Recurrent flooding affecting the *Acaba Mundo, Leitão, Vilarinho*, and *Ressaca* creeks, and in other places in the city, make urgent the need to implement the solutions identified in the DRENURBS.

1.14 Additionally, many of the retaining works function less than optimally due to errors in the calculation methods to estimate water flows, and other factors, such as illegal disposal of solid waste, siltation of the channeled waterways, occupation of river banks by low income communities, and interference by other urban infrastructure.

2. Urban Sanitation

1.15 The municipal sewage service of Belo Horizonte is operated by COPASA, the public, State company, commissioned for the provision of potable water and sanitary sewage services. In the Belo Horizonte Municipality, potable water reaches 98% of the population, while 90.7% has sewerage. Sanitary service coverage is high compared to the rest of Brazil (69%). The population without access to sewage is estimated as 176,000, generally situated in areas with a high risk of flooding, where conventional infrastructure works are difficult to implement.

1.16 COPASA undertakes integrated planning for the collection and treatment of wastewater in Belo Horizonte. Two large treatment facilities to be located downstream, beyond the periphery of the city, have been designed to treat the water in the *Arrudas* and *Onça* watersheds. These plants are to receive the principal interceptors from the collection system.

1.17 Currently, the wastewater treatment plant of *Arrudas* processes 2.25m^3/s at secondary treatment level, which allows processing of wastewater generated by 1.6 million inhabitants. In 2003, COPASA has started the first phase of the new wastewater treatment plant *Onça*, which will have a capacity of 1.8 m^3/s expected to be operating by the end of 2004. These treatment plants have been located and designed in the context of the Belo Horizonte integrated sanitary sewage planning, aimed at covering all future wastewater.

1.18 In spite of COPASA's efforts to improve sanitary conditions in the city, there are still several points where wastewater discharges directly into retained and non-retained creeks. These discharges come mainly from sewerage networks that do not have interceptors; resulting in a significant negative environmental and sanitary impact in those areas.

1.19 91% of the city's population has a solid waste collection and urban cleaning system provide by the Superintendent for Urban Cleaning (SLU). Waste collection is not available in the high-risk areas due to the lack of access roads. The local community is used to disposing domestic solid waste and other residues

along the waterways, which affects the drainage capacity of the streams and constitutes one of the main causes of obstruction of water flow. This in turn causes flooding and increases pollution. Even though MBH collects such waste and residue through annual cleaning campaigns of local streams and creeks, which in 2002 alone brought about some 12,000 m^3 of waste, and although the SLU undertakes education campaigns for the same purpose, the problem is far from solved. Additional measures must be taken to improve access and facilitate collection of waste in the difficult-to-reach areas.

D. Bank experience in the sector

1.20 Since 1960, the Bank has approved 30 loans and technical cooperations in the drainage and sewage sector for Brazil, providing a total of US$2.27 billion for this purpose. Of these, approximately 70% correspond to projects that included significant sewage and wastewater treatment components, approved in the last decade. These loans have concentrated mostly in large projects for State agencies in the principal metropolitan areas, including: Sanitation in *Fortaleza, Ceará*; programs of Decontamination of the *Tietê* River in *São Paulo*; the *Guanabara* Bay in Rio de Janeiro; the *Bahia de Todos os Santos* in Salvador; the *Guaîba* basin in *Porto Alegre*, and the Sanitation programs for the Federal District in *Brasilia*, as well as the Water and Sanitation for *Goiânia*. The principal objective of all these projects is to reduce the wastewater treatment deficit and to control flooding. The Bank has also collaborated with the recently established National Sanitation Secretariat by providing funding for seminars to define a strategy to fulfill the Millennium Development Goals at a regional level. The present operation would be the first one for Belo Horizonte.

E. World Bank Actions

1.21 The portfolio of the World Bank for sanitation in Brazil for the last three decades is made up of 18 projects covering investments for 2.300 millions of dollars. Four of those projects are currently under implementation: Modernization of the Sanitation Sector Program II (PMSS II); PROSANEAR; Water Management and Coastal Pollution in *Espirito Santo*; and Water Quality Project for Sao Paulo. The four together amount to some US$900 million dollars. In general, the World Bank's portfolio covers three strategic themes: (i) institutional and regulatory reform; (ii) enlargement and improvement of sanitation services to the lowest-income segments of the population; and (iii) urban watershed management through integrated and multisector activities associated with maintaining water quality, pollution control and basic infrastructure.

F. Lessons learned by the Bank in the sector

1.22 The design of this Program takes into consideration the lessons learned by the Bank in similar projects, particularly in Brazil. The lessons considered are: (i) *works for the hydraulic and sanitary improvement of urban waterways must include the provision of areas for social use, and the landscaping of the urban*

environment, in order to foster the collaboration of the community in the sustainability of the improvements made; (ii) *in relocation projects, it is indispensable to have an action plan ready for the expropriation of land, acquisition of new plots and the design of the new housing solutions, with complete urban infrastructure*, in order to implement on time; (iii) *sanitary and environmental education must complement the execution of works*. This will improve the participation and collaboration of the local population so that they accept the fees and the taxes established to finance the works, and will promote an adequate use of the public areas, such as parks and green areas, built by the project; (iv) *the executive projects or comprehensive basic designs must be ready* in order to avoid problems for the tendering and execution of the works, optimizing costs and time of execution; and v) *the participation and institutional coordination of local organizations in the program must be totally defined*. This is indispensable for this program due to the innovative approach of the integrated interventions involving organizations from several sectors.

1.23 Considering these lessons, the present operation has introduced: (i) the inclusion of urban equipment for social use, streets, parks and recreation areas in the drainage projects; (ii) the request for the Program Resettlement Plan to define clear responsibilities and the commitment of the organizations involved; (iii) the implementation of an ongoing campaign of social communication and promotion of the Program including a strong component of environmental and sanitary education; (iv) the introduction of an execution scheme and calendar organized in packages of interventions, which link the activities of expropriation and relocation, and the corresponding phases of civil works, with the continuing activities of social communication in order to avoid social impacts; and the requirement of having the final design ready at least for the works to be executed in the first year of the Program; and (v) the signature of an Execution Agreement between the State and the Municipality for the sanitation works to be operated by COPASA.

G. Bank country strategy

1.24 The strategy of the Bank in Brazil has as its main elements: (i) to promote and further develop the reform and modernization of the public sector at Federal and State levels; (ii) to support efforts for the improvement of the competitiveness and improve market access for Brazilian products; (iii) support efforts to reduce social inequalities and poverty; and (iv) address the problems in the environmental management of natural resources, with emphasis on the protection of fragile ecosystems.

H. Conceptualization of the Program

1.25 The Program is based on the search for the integration of the waterways in the landscape and urban structure of the city, and its design has taken into account the following principles: (i) integrated treatment of the sanitary and environmental problems of the watershed as a planning unit for interventions, (ii) reduction soil

impermeability through reforestation along the waterways and implementation of "linear parks; (iii) the non-compromising of downstream flows; and (iv) inclusion of those communities affected by and benefiting from the Program in the decision-making process. This modern drainage strategy, integrated with the activities of sanitation and solid waste management, has been adopted to maximize the environmental benefits of the investments.

1.26 In the framework of the strategy, the Municipality of Belo Horizonte established as a goal to develop the Program DRENURBS in phases within a 15 year horizon. In its first phase of execution, corresponding to the present operation, intervention in approximately 35 km of waterways situated in 8 secondary watersheds or sub-basins, corresponding to the following streams: *1º. de Maio, Engenho Nogueira, Baleares, Terra Vermelha, Bonsucesso, Maria Carmen Valadares, Nossa Senhora da Piedade and Piteiras*, has been established as a priority. These sub-basins have an area of influence of 23.7 km^2 (7.0% of the urban area of Belo Horizonte), with an estimate of 86,160 inhabitants benefiting directly (4.0% of the population of Belo Horizonte).

1.27 The selection of sub-basins was made based on the following criteria: (i) over 165 points in the multiple indicator that incorporates the density of the population; relationship between the cost of the implementation of the works and the population of the sub-basin; percentage of urbanization; coverage of the network of micro drainage; coverage of the sewerage network; coverage of the service of solid waste collection; incidence of the IPTU, Urban Tax on Land and Buildings; incidence of floods; incidence of erosion; incidence of waterborne illnesses; population density in the areas where interventions will take place; positive environmental impact in the area of intervention and downstream; interest of the population; number of families to be relocated, and interference of the interventions with the road system; (ii) consider the execution of integrated interventions for the components for the reduction of flooding risk and improvement of water quality; (iii) availability of sanitary sewage treatment solutions; (iv) have basic projects and budgets ready and approved including all necessary interventions; and (v) have a resettlement plan for families and businesses.

1.28 Based on these criteria, the proposed Program has been organized in three components: (i) Reduction of the risk of floods; (ii) improvement of the quality of waterways; and (iii) improvement of the system of urban drainage and environmental management. The Program includes the execution of works and activities in sub-basins and it is completely defined for the following ones: *Baleares, 1º de Maio and Bonsucesso*. The works in the sub-basins of *Engenho Nogueira, Terra Vermelha, Maria C. Valadares, Nossa Senhora da Piedade, and Piteiras,* will be defined with more precision based on the results of the executive projects; thus, the corresponding works will only be tendered after the studies of a hydrologic model have been completed.

II. THE PROGRAM

A. Goals and objectives

2.1 The purpose of the Program is to contribute to the improvement of the quality of life for the inhabitants of the Municipality of Belo Horizonte, through the integral restoration of local waterways. Specific objectives of the Program are: (i) reduce flooding risk; (ii) improve the quality of waterways; (iii) ensure the sustainability of urban improvements by consolidating drainage and urban environment management.

2.2 The Program would achieve the following goals:

Performance Goals		
	2003	**2008**
Environmental health index	0.66 – 0.90	0.91 – 0.96
Points or areas of flooding	12	0
Pollution intercepted (kg.BOD/day)	0	4.670
Irregular solid waste disposal (m^3/year)	500	<100

B. Description

2.3 The Program allows the country to fulfill Millenium Development Goal number 7: "Guarantee environmental sustainability", since it increases sewage service coverage from 73.9% in 1990, to 90.7% in 2008; this improvement surpasses the Goal, which would be approximately 86.8%.

2.4 The Program will be executed in five years, and includes eight projects in the secondary watersheds *1o de Maio*; *Engenho Nogueira*; *Terra Vermelha*; *Bonsucesso*; *Maria C. Valladares*; *Na. Sa. Piedade* and *Piteiras*. Each project encompasses a package of integrated interventions for the secondary watersheds covering urban sanitation, river drainage, road improvement, rehabilitation of river banks and spaces for social use, and resettlement of families. Each package will respond to site specific needs. Program sizing and component definition was based on a representative sample that included three such secondary watersheds. The works would cost US$25 million, which corresponds to approximately 30% of the Program's total cost. The Program is organized under three components:

1. Flood risk alleviation (US$45.3 million)

2.5 Implementation, for each secondary watershed, of physical works devoted to improving flood control and reducing sedimentation in urban watersheds, as well as integrating water resources into the urban environment. Included in the works are: (i) Drainage (US$13.1 million): hydraulic works on approximately 36.7 km of urban streams (bank stabilization, riverbed rectification, dredging), and works to control erosion and landslides on the stream banks, emphasizing environmental protection; construction of 5 small basins for flood control; and construction of

7.9 km. of rainwater collectors in six secondary watersheds; (ii) Urban roads (US$13.9 million); construction of approximately 26.9 km. of secondary roads along the streams integrated in the urban road system, to improve access for the collection of solid of waste currently disposed of illegally in the streams; (iii) Rehabilitation and protection of open spaces (US$7.6 million): implement approximately 13.4 ha of protected areas along the stream and approximately 9.2 ha of public parks and social squares which will include sports fields and equipment; spring protection; re-planting of approximately 13.7 ha in the *Av. Maria Carmen Valladares* and *Piteiras* watersheds; and (iv) Involuntary resettlement (US$10.7 million); resettlement of approximately 1,365 families, includes US$9.7million in expropriation and compensation costs.

2. Waterway quality improvement (US$3.2 million)

2.6 Includes the implementation of sewerage works in each secondary watershed, including the installation of 31.4 km of bankside interceptors, 30.5 km of collection networks, and 5,380 household connections. These works will allow collection of wastewater that would be channeled to existing or future wasteworked treatment facilities, eliminating the direct discharges that currently pollute the works courses.

3. Improvement of municipal management in urban drainage and environment (US$2.8 million)

2.7 Includes the improvement of efficiency and effectiveness of the existing drainage system and current environmental management procedures through the following activities: (i) urban drainage management: introduce a drainage management and flood control service as part of a scheme for warning and prevention, as defined in the Drainage Master Plan. The activities will include: the purchase of equipment to measure atmospheric precipitation and rainwater flow; the implementation of a model for the municipal management of urban drainage; the expansion of the integrated, urban drainage, information system; the improvement of technology and training for the *Secretaria Municipal de Estrutura Urbana* –SMEU-; (ii) socio-environmental management: introduce an integrated, geographically-based, information system for environmental management; expand water quality monitoring; implement communication programs for those communities affected by the project and the rest of the Municipality; implement an environmental sanitation education program for those communities located in the project's area of influence, particularly those along the streams, to raise their awareness of the implications of urban cleanliness, solid waste recycling and sanitation, and the value of environmental renewal; and training and modernization of *Secretaria Municipal de Meio Ambiente e Saneamento* –SMMAS- technology; (iii) integrated watershed management: training and capacity building to integrate the MBH into the *Rio das Velhas* Watershed Committee.

C. Cost and financing

2.8 The Program totals an estimated US$77.5 million. The table below shows the breakdown of program costs by source of funding and investment category:

Program costs (US$ thousands)					
		IDB	**Local**	**Total**	**%**
I. ENGINEERING AND ADMINSITRATION		**5,420**	**4,350**	**9,770**	**12.6%**
1.1	Executing unit	1,030	1,040	2,070	
1.2	Work supervision	2,100	-	2,100	
1.3	Studies and projects	2,290	3,310	5,600	
II DIRECT COSTS		**40,730**	**10,550**	**51,280**	**66.2%**
II.1 Flood risk alleviation		**39,185**	**6,130**	**45,315**	
2.1.1	Drainage	11,585	1,480	13,065	
2.1.2	Urban Roads	12,450	1,500	13,950	
2.1.3	Rehabilitation and protection of open spaces	6,900	750	7,650	
2.1.4	Involuntary Resettlement	8,250	2,400	10,650	
II. 2 Waterways quality		**-**	**3,180**	**3,180**	
2.2.1	Collectors and interceptors	-	3,180	3,180	
II.3 Urban drainage and environmental management		**1,545**	**1,240**	**2,785**	
2.3.1	Urban drainage management	1,345	500	1,845	
2.3.2	Socioenvironmental management	200	240	440	
2.3.3	Integrated Watershed management	-	500	500	
III CONCURRENT COSTS		**350**	**12,150**	**12,500**	**16.1%**
3.1	Land and compensation	-	11,720	11,720	
3.2	Monitoring and evaluation system	200	400	600	
3.3	Auditing	150	30	180	
IV FINANCIAL COSTS		**-**	**3,950**	**3,950**	**5.1%**
4.1	Interest	-	3,450	3,450	
4.2	Commitment fee	-	500	500	
4.3	…FIV[3]	-	-	-	
TOTAL		**46,500**	**31,000**	**77,500**	**100.0%**
	%	**60,0**	**40,0**	**100,0**	

2.9 The Bank will finance 60% of total program costs, equivalent to US$46 million, from the Ordinary Capital, to be disbursed in hard currency in accordance with Bank policy. The local contribution will cover the remaining 40% of total program costs, equivalent toUS$31.0 million, which will be funded by the MBH.

[3] With regard to the inspection and supervision fee, in no case will the charge exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount, divided by the number of six-month periods included in the original disbursement period.

2.10 The loan will be subject to the following conditions: (i) interest rate: LIBOR; (ii) credit fee: 0.25% on undisbursed loan amounts; (iii) disbursement period: 5 years; (iv) grace period: 5 years; and (v) amortization period: 25 years.

III. PROGRAM EXECUTION

A. The borrower, guarantor and executing

3.1 The borrower will be the Municipality of Belo Horizonte (MBH). The Executing Agency will be the *Secretaria Municipal de Coordenação de Política Urbana e Ambiental* –SCOMURBE-. The MBH will implement a centralized executing mechanism with the creation of a Program Executing Unit (PEU), which will be attached to SCOMURBE.

3.2 The PEU will have an Executive Coordinator, seven full-time specialists appointed by the Municipal Secretariats linked to execution of the Program's different components, and two consultants. This team will incorporate the following professionals: 1 drainage and civil works specialist with experience in project execution and supervision, from the Municipal Urban Infrastructure Secretariat (SMEU); 1 sanitation specialist, from COPASA; 1 environmental specialist, from the Municipal Sanitation and Environment Secretariat (SMMAS); 1 specialist with experience in the resettlement of families, appointed by the *Companhia Urbanizadora de Belo Horizonte* –URBEL-; 1 financial specialist, from the *Secretaria Municipal de Coordenação e Finanças* –SCOMF-1 specialist in social mobilization and communication, from the *Secretaria Municipal de Coordenação de Política Urbana e Ambiental* –SCOMURBE-; 1 drainage specialist from the *Superintendencia de desemvolvimento da capital* -SUDECAP-; 1 social and environmental management consultant; and 1 monitoring and planning consultant. This organizational arrangement minimizes the potential for conflicts that could result from the current structure of SCOMURBE, which is organized in Secretariats by sector, all operating at the same level of authority. Under the proposed arrangement, dependencies of SCOMURBE will support Program Execution (¶4.2), without overloading the current structures with additional personnel.

3.3 The PEU will act as the sole link between the MBH and the Bank and will have the following responsibilities: (i) to prepare and monitor the procurement of works, goods and consulting services; (ii) to plan and coordinate activities with the SCOMURBE Secretariats and COPASA; (iii) to verify the introduction of measures designed to mitigate adverse environmental impacts; (iv) to control and monitor the financial and technical supervision of construction; (v) to prepare progress and financial reports; (vi) accounting control, submit disbursement requests and supporting documentation; and (vii) to monitor and evaluate results.

3.4 Considering the staff available to MBH, and their limited experience in implementing projects financed by multilateral organizations, the PEU will receive technical support from a specialized firm. Under the Executive Coordinator, the specialized firm will: (i) train technical stuff of the MBH; and (ii) support the increasing involvement of PEU in implementation until it takes over fully starting in the third year of execution. The specialized firm will: (i) prepare all documents for procurement; (ii) monitor and control project execution;

(iii) collect and organize data and information, results attained, and technical reports from Program implementation; and (iv) define and implement internal accounting and control systems. **Evidence that the PEU has been established and is operational, with all staff appointed, as well as evidence that the MBH has started the bidding process for the hiring of the specialized firm, will be conditions precedent to first disbursement. Prior to start execution of the Program's first construction work evidence that the specialized firm to support the PEU had been hired, must be submitted to the Bank.**

B. Execution Plan

1. General

3.5 The eight integrated secondary watershed projects included in the Program have been divided in three groups for the purposes of physical and financial planning. The groups are: Group I: *Baleares*, *1º de Maio* and *Bonsucesso*; Group II: *Engenho Nogueira* and *Nossa Senhora da Piedade*; Group III: *Terra Vermelha*, *Av. Maria Carmen Valadares* and *Piteiras*. The implementation of studies and works for each group will be dependent on Bank authorization to commit resources. The Bank will only authorize resource commitments when the Executing Agency complies with the following conditions: The first group, whose implementation starts in the first year, there are no conditions in addition to those prior to first disbursement. For the second group: studies to develop the hydrological model must have been contracted, executive designs of the works must be available, and environmental control plans (RCA/PCA) as well as detailed resettlement plans must be finished, before calling for tenders for the construction of the works. For the third group: evidence must be submitted that the hydrological model has been implemented, in addition to complying with the conditions associated to the completion of executive designs of the works, environment and resettlement plans.

3.6 To facilitate the institutional coordination of Program execution, the Municipality of Belo Horizonte will enter into cooperating agreements with the following public agencies: URBEL for housing construction; SUDECAP with regards to projects on drainage, roads and green and social use areas; and COPASA in sewage projects. **Prior to first disbursement, evidence must be submitted that all these agreements have been signed.**

3.7 A specialized firm will be retained to provide technical and environmental supervision of the Program works. The firm will coordinate its work with the technical team of SMEU in accordance to terms of reference agreed upon with the Bank. **Prior to start execution of the Program's first construction works, evidence that the specialized supervision firm has been hired must be submitted to the Bank.**

2. Execution of the components on flood risk alleviation and water quality improvement

3.8 The works projects are based on the Drainage Master Plan and the DRENURBS Program. The projects in the first group (secondary watersheds *Baleares*, *1º de Maio* and *Bonsucesso*) and their executive designs are ready. The budgets were prepared based on June 2003 unit prices. Preliminary designs and budgets are available for the works in the remaining groups. Executive designs will be prepared in accordance the Program Execution Manual, which includes MBH rules and Bank requirements. The Manual, which was agreed upon between the Bank and the Executing Agency, defines: (i) technical socio-economic and environmental criteria and, requirements for the preparation and approval of projects for drainage systems, roads, sewage systems, resettlements, and green and social areas; (ii) environmental education, social mobilization, and social communication actions that must be implemented in parallel with the construction of works to ensure their full benefit; (iii) criteria to prioritize eligible secondary watersheds.

3.9 The works of each integrated project (secondary watersheds) must have: *Licença de Instalação* issued by the Municipal Environmental Authority; the corresponding executive resettlement plan PDR, when the project requires resettlement of families; technical, socio-economic viability studies as well as the basic technical and environmental projects as required by the Program Execution Manual. The Manual will also require that community participation in project development be verified. In the case of sewage projects, agreements with the beneficiaries and a COPASA financing mechanism to ensure connection to the main systems must be available.

3.10 No land acquisition problems are expected, since these works will be basically developed in public lands. Expropriation of land to implement works of public interest is allowed by law, and thus no difficulties are expected in the acquisition of land or user-rights. **However prior to the contract adjudication for each specific work, evidence that the Municipality holds, legal ownership, right of way and any other right over land required for construction must be submitted to the Bank.**

3. Execution of the improvement of municipal management in urban drainage and environment component

3.11 Equipment will be acquired to implement the flooding monitoring and control, as well as to expand the integrated drainage and environmental geo-referenced information system (GIS). In parallel, the SMEU will be strengthened through 2 consultancies: (i) introduction of the hydrological monitoring system, and development of the mathematical model; and (ii) development of the drainage system management model, and training and technology modernization for SMEU. For the social and environmental management system that will support SMMAS' control activities and facilitate public participation, three consultancies

are foreseen: (i) water quality monitoring campaigns in the secondary watersheds and integration of data in GIS; (ii) development of sanitary and environmental education activities for beneficiaries, to focus on sustainability and improved management of sanitary waste for the benefit of all; and (iii) training and technology update for SMMAS, including measures and procedures to insure sustainability of the parks and open social areas. Funding is also provided for community mobilization and communication, to be undertaken with support from URBEL, such as the communication and information activities between MBH and populations either benefited or affected by the project, as well as institutional support through training and capacity building to facilitate the participation of MBH in the *Das Velhas* River Watershed Commission. Terms of reference for all these consultancies are complete and agreed upon with the Bank. Acquisitions and consultants will be done by the UEP and will be undertaken under the supervision and with technical support from the respective sector secretariats of the Municipality.

C. Evaluation and management of social and environmental impacts

1. Environmental evaluation and licensing

3.12 In accordance with municipal, state and national environmental legislation, the Environment and Urban Sanitation Secretariat (SMMAS) of the MBH is the environmental authority responsible for the implementation of the Municipality's Environmental Policy,. It is responsible, among other things, for the technical review, which in turn includes the environmental "licensing", of activities and works in the Municipal realm that may have adverse environmental impacts. It also establishes and enforces environmental quality standards through an agreement between MBH and the Minas Gerais State Government. The Municipal Environmental Council, COMAM, issues the licenses.

3.13 The MBH contracted the Environmental Impact Assessment –EIA- and respective RIMA for the Program, taking into account the DRENURBS projects and activities with a horizon of 15 years (48 secondary watersheds). The study includes all activities incorporated in the current operation. Based on that study, and after a public consultation that took place on March 11, 2003, COMAM issued the *Licença Prévia* on March 27, 2003. In it, COMAM recommended that an *Licença de Instalação* be issued for each project -cluster of interventions- for a secondary watershed, based on a Report and Environmental Control Plan – RCA/PCA; the latter being to detail actions and works foreseen, direct impacts, mitigation means and impact controls, at an "executive project" level.

3.14 As a programmatic EIA, the environmental and social impact identification and evaluation, as well as mitigation and control measures, have been developed for the universe of projects. A supplementary socio-environmental assessment has been done as part of the Program's preparation, focusing on the identification and analysis of impacts relevant to specific program financing. The Socio-Environmental Feasibility Report presents an integrated analysis of positive and

negative impacts expected as a result of the Program, the strategy to follow in future stages, and a proposal for mitigation and monitoring measures.

2. Socio-environmental impact management

3.15 The Social and Environmental Management Plan (PGAS) for the program contains all measures and activities in the social and environmental areas, devised to prevent and minimize negative impacts, as well as maximize the positive impacts anticipated. The Plan is made of: (i) *impact control measures*: Environmental Specifications for Works; specific RCA/PCA for the projects; and (ii) *compensation measures*: Compensation and Resettlement Plan. The Plan also includes a Management Scheme which defines functions, execution and supervision responsibilities for the social and environmental activities mandated in the plan. An environmental and sanitary education program, as well as all other community communication programs, will complement impact mitigation measures. **All tendering documents must include: (i) mitigation measures, and environmental specifications included in the Program Execution Manual; and (ii) specific requirements defined in the PCA approved by the environmental authority as a requisite to issue the respective Installation License**.

3.16 The execution of PGAS will be the responsibility of SCOMURBE, through the PEU, URBEL and SMMAS. The PEU is responsible for facilitating the environmental licensing of all projects, supervising the environmental and social programs included in the Plan, enforcing other environmental instructions and requirements included in the Execution Manual, and following up environmental and sanitary education activities. Supervision of works to be contracted will include enforcing execution in accordance with the environmental specifications on all contractors in charge of works financed by the Program.

D. Involuntary Resettlement

3.17 For the eight secondary watersheds included in the Program, 1,372 buildings were identified as likely to the partially or totally affected by the works. Out of those, 1,233 are residences; 1,365 families will need to be resettled and 132 properties expropriated. Considering the number of families to be directly affected, the resettlement strategy adopted in the Compensation and Resettlement Plan is not restricted just to resettlement, but also covers and fosters changes in standards, concerning both the housing unit itself and the urban context. The proposals advanced by the Plan resulted from extensive consultation and interaction in which all affected parties participated. The following resettlement alternatives were identified: (i) *Independent Relocation* (approximately 370 owners) – compensation in cash according to the country's legal process and the Bank's policies applicable to full owners able to find a relocation solution by themselves; and (ii) *Assisted Relocation*- for low-income owners of buildings located in irregular settlement areas, pubic or private, generally without access to minimal housing standards. Thus, two types of resettlements are foreseen: (a) *Monitored*

Resettlement (approximately 315 families) – which will subsidize the acquisition and resettlement of families in houses existing in near-by areas, within the value established for the benefit (R$12,500) in accordance with the regulations of the Municipal Program for Removal and Resettlement for Public Works (PROAS) created by MBH. This option will allow for immediate resettlement of a family within existing urban areas, in many cases promoting rapid social integration; and (b) *Construction of new housing units* (approximately 680 families) - which provides for the relocation of families in the same region where they live. This option is preferred in the following cases: an elevated number of families to resettle; a lack of housing units offered in the market in the affected region; a lack of land apt for construction; and social relations that provide for the permanence of the community. Non-residential units (commercial, institutional or services) will be able to opt for independent relocation or construction of new buildings, according to conditions defined by the owner.

3.18 This process will be accompanied by the team in MBH, and will involve permanent follow up and evaluation to ensure that the expected results are achieved at the end of the Program. Detailed Resettlement Projects for each secondary watershed to be covered during the first year were drafted based on the Program Resettlement Plan. The Detailed Resettlement Projects include activities such as mobilization, cadastre and family agreement to the plan; selection from the available alternatives and the formulation of the executive projects for new housing complexes. Criteria and directives established in the Resettlement Plan for the Program are included in the Program's Execution Manual, and will be followed in the formulation of detailed plans and executive projects for future projects. **Before tendering for works funded by the Program, evidence of conclusion of detailed resettlement programs, as well as the contracting for the construction of new housing units will be required when applicable. Similarly, before initiation of construction of works, evidence that the families have been effectively resettled and the affected owners have been compensated will be required.**

E. Execution period and disbursement schedule

3.19 The Program's execution period will be five years. The Following table summarizes the proposed disbursement schedule.

Disbursement Schedule (millions of US$)				
YEAR	**IDB**	**LOCAL**	**TOTAL**	**%**
1	9.2	9.0	18.2	23.5
2	19.3	11.5	30.8	39.7
3	10.0	6.1	16.1	20.8
4	8.0	3.3	11.3	14.6
5	0.0	1.1	1.1	1.4
TOTAL	**46.5**	**31.0**	**77.5**	**100.0**

F. Procurement procedure and schedule

3.20 The procurement of goods and the awarding of contracts for construction and consulting services will be carried out by MBH in conformity with the Bank procedures stipulated in the loan contract. International competitive bidding will be required for the procurement of goods in amounts equal to or greater than US$350,000; for construction contracts in amounts equal to or greater than US$5,000,000; and for consulting services in amounts equal to or greater than US$200,000. These thresholds are consistent with those recommended for Brazil by the Bank's Procurement Unit.

G. Recognition of Expenses

3.21 MBH has requested the Bank the recognition as local counterpart expenses incurred after February 2003, in the amount of US$2,000,000 to prepare the Program's projects as well as the consulting services to support the preparation of the Program itself. The procurement and awarding contracts for such services were carried out in conformity with Bank procedures for expenses with local counterpart funding.

H. Flow of Funds

3.22 The loan proceeds and the local counterpart to be funded by MBH will be channeled through special Bank accounts that will be opened by the MBH in the name of the Program. MBH will use the funds in these accounts, for the procurement of goods, works and consulting services for the Program. A revolving fund will be established in the amount of up to 5% of the Bank's loan. Within sixty days of the end of each semester, the PEU will submit bi-annual reports on the status of the revolving fund.

I. Systems Operations

3.23 The operation and maintenance of the drainage and sanitation systems will be the responsibility of MBH and COPASA, based on the concession contracts to be signed with the beneficiary municipalities. In order to monitor the state of maintenance of the works, MBH and COPASA must submit an annual operation and maintenance plan for the systems financed with Program's resources. This annual plan will include a report on system operation and maintenance performed during the previous year. This annual plan will be submitted to the Bank within the first quarter of every calendar year for five years following completion of the first Program's works.

J. Program Monitoring and Evaluation

3.24 The PEU will be responsible for the planning, monitoring and evaluation system for the Program, which will include a database with information on the performance indicators and the Program impact, as defined in the logical

framework (see Annex I). The system will allow: (i) the control and monitoring of the integrated projects in the watersheds/secondary; (ii) evaluation of the projects' impacts; (iii) evaluation of Program effectiveness. The Resettlement and Relocation Plan PDR (¶3.23) is part of the monitoring and ex-post evaluation of the families affected by expropriation and resettlement, based on specific indicators such as changes in housing standards, social inclusion and adoption of environmentally sustainable practices. The system will be implemented in the PEU aided by the specialized firm.

3.25 The Bank's Country Office in Brazil will monitor and oversee Program execution. For this, MBH has submitted to the Bank a detailed work program, and execution schedule. MBH will also submit to the Bank bi-annual reports on execution progress, evaluating compliance with the performance indicators included in the Logical Framework (see Annex I).

3.26 Within 30 months after signature of the loan contract, or once half the total Program cost has been disbursed, whichever occurs first, a mid-term evaluation of the Program will be conducted. The mid-term evaluation will be based on information provided to the Bank three months before Program start-up, and will review compliance with Program performance benchmarks, planning process, and project cycle efficiency, as well as compliance with contractual obligations. Before the mid-term review MBH must provide the Bank with a program status report and details on the above items and the main areas of review. If the review shows that the Program must be adjusted, MBH will have sixty days to submit to the Bank a plan to correct the problems identified.

K. Accounting, internal control and auditing

3.27 The PEU will: (i) maintain accounting and financial records and the internal control system to manage the Program's resources in accordance with the provisions in clause 7.01 of the General Conditions in the loan contract, so that administration of the Program's funds can be verified separately from other programs administered by MBH; (ii) prepare and present to the Bank the financial statements, semi-annual reports on the revolving fund, and any other financial reports that may be required; (iii) submit disbursement requests and supporting documentation to the Bank; and (iv) properly file all supporting documentation on contracts and disbursements with Program's funds, including local counterpart, to be verified by the Bank and external auditors.

3.28 Within 120 days following the end of each fiscal year, the borrower must submit to the Bank the Program's financial statement as well as those from COPASA. These financial statements must be audited by a private auditing firm agreed upon with the Bank. Auditing of the financial statements will be done according to the terms of reference (AF-400) and Bank requirements (AF-100 and AF-300). Bank procedures (AF-200) will be used to select and contract of the external private auditing firm. The auditing costs, with the exception of taxes, will be financed with proceeds of the Bank's loan.

3.29 COPASA will make available to the Bank and to the external private auditing firm all supporting documentation, the financial and accounting records as well as the operational information for the Bank and the external auditors to verify compliance with the loan contract clauses on tariffs, maintenance and any other that may be included as a COPASA responsibility.

L. Program Evaluation

3.30 MBH will not conduct an ex-post Program evaluation. However, MBH will collect and process data should the Bank decide to fund such an evaluation with its own resources. The evaluation will follow a methodology similar to that used for the ex-ante analysis, including benefit-cost analysis and internal rate of return, as well as analyses of other relevant socio-economic results. The data compiled will be forwarded to the Bank in annual reports as of the first year of execution. The first report, will provide a detailed description of the data collection and processing procedures, which must include: (i) budgeted and actual costs of the works; (ii) total number of households connected to the sewage systems; (iii) number of households that have been subjected to floods within the Program area; and (iv) cost and effectiveness of measures taken to mitigate adverse environmental impacts.

IV. THE BORROWER AND THE EXECUTING AGENCY

4.1 The Borrower will be the Municipality of Belo Horizonte (MBH). The *Secretaria Municipal de Coordenação de Política Urbana e Ambiental* –SCOMURBE- will be the Program's Executing Agency.

A. Municipality of Belo Horizonte (MBH)

4.2 The organizational structure of the Municipality of Belo Horizonte (MBH) comprises the Mayor (*Prefeito*), his/her cabinet and the municipal Secretariats. The SCOMURBE is responsible for drainage and solid waste management services. In SCOMURBE there are six Under-Secretariats, the *Superintendência Municipal de Desenvolvimento da Capital* –SUDECAP- and the *Superintendência de Limpeza Urbana* –SLU-. The *Companhia de Saneamento de Minas Gerais* -COPASA- is in charge of water and sanitation services.

4.3 The MBH is developing a process of administrative reform to promote faster procedures and decentralize municipal administration. SCOMURBE has been given the main function of coordinating activities of six thematic secretaries, which are responsible for: Urban Cleaning; Environment; Sanitation; Urban Structure; Urban Regulation and Housing. Each Secretary is legally endowed and has the management capabilities required to implement the tasks currently under their responsibilities. The SLU has enough management capabilities to implement its functions and also has the technical and financial capabilities needed to expand the coverage of the solid waste collection services to accessible urban areas.

B. Municipal Fiscal Situation

4.4 The financial situation of MBH has been improving during 1999-2003, and it now exhibits a surplus in current income minus current expenditure that is more than enough to service its debt. Improvements in tax collection as well as in the collection of past unpaid taxes and fines is having a positive impact on current income. The tax collection has been increasing on an average of 8.4% per year. Despite the current savings, increases in salaries in the past two years, the personnel expenses as well as capital expenditures (mostly representing transfers to municipal autarchies and foundations to finance investments), have produced a fiscal deficit for each of the years analyzed. The following table summarizes the financial situation of the MBH, expressed in million of "current" *reais*[4].

[4] The exchange rates in Brazil were: 1999 = 1.8162; 2000 = 1.9546; 2001 = 2.3207; 2002 = 3.5405; 2003 = 2.8884

MBH financial statement (last five years in R$ millions)					
	1999	**2000**	**2001**	**2002**	**2003**
Current Income	**1,312.1**	**1,484.2**	**1,664.8**	**1,864.6**	**2,057.4**
Fiscal income	466.9	509.6	546.8	598.5	643.7
Current transfers	736.1	838.3	936.3	889.8	1,057.5
Other current incomes	109.1	136.3	181.7	376.3	356.1
Current Expenses	**(1,102.6)**	**(1,265.6)**	**(1,434.4)**	**(1,709.8)**	**(1,789.3)**
Personnel expenses	(322.7)	(347.7)	(405.0)	(822.7)	(818.6)
Current transfers	(664.8)	(785.8)	(883.4)	(868.5)	(824.4)
Other current expenses	(115.1)	(132.0)	(146.0)	(18.6)	(66.8)
Current Superavit	**209.5**	**218.7**	**230.4**	**154.8**	**268.1**
Capital expenses	**(211.2)**	**(194.5)**	**(188.3)**	**(186.5)**	**(251.2)**
Investments and transfers	(205.6)	(190.9)	(179.6)	(177.5)	(245.5)
Other capital expenses	(5.6)	(3.6)	(8.7)	(9)	(5.7)
Debt Service	**(50.6)**	**(56.7)**	**(78.9)**	**(70.8)**	**(75.4)**
Capital Income	**2.8**	**1.0**	**0.3**	**9.5**	**3.2**
Credit Operations	**4.4**	**4.0**	**0.6**	**15.9**	**20.3**
Final Deficit	**(45.1)**	**(27.5)**	**(35.9)**	**(77.1)**	**(35.0)**
Primary Result	**(5.1)**	**14.6**	**31.5**	**(32.6)**	**1.1**

4.5 Total debt on December 31st 2003 was R$ 566 million, all of it owed to the National Treasury. The MBH signed in February 2002 a refinancing agreement with the STN. Compliance with this agreement is a requirement for contracting a loan with the Bank, as recommended by COFIEX No. 635/02. According to STN reports, the MBH is complying with the agreement. The MBH must also comply with a set of indicators legally established, which yield the results indicated in the following table calculated based on 2003 financial results. As it can be observed in the following Table, all indicators are within the legally established limits.

MBH Indicators		
Indicator	**Legal Limit**	**Calculated Limit**
1- Personnel expenses / ICN[5]	60.0%	43.2%
2- Credit operations made in the exercise / ICN	16.0%	1.01%
3- Anual debt service / ICN	11.5%	4.5%
4- Debt / ICN	1.2 times	.28 times

C. Municipal Regulatory Framework for Sewage Services

4.6 Municipal Law 7907/99 establishes in its article 12 that SUDECAP must implement directly or indirectly (concession) all municipal services related to supply of water and sewage systems, including complementary activities as detailed in the regulations. Article 13 in Law 7907/99 defines that the municipality will set the tariff on water and sewage, to pay for the services and constitute a municipal sanitation fund.

[5] Datos de diciembre de 2003.

4.7 Municipal Law 8260/01 institutes the municipal sanitation policy. This Law establishes that the services must be delegated by concession, through open bidding, or by means of cooperation agreements. These two instruments to delegate must be approved by a specific municipal law. For the purposes of allowing effective social control, and properly managing economic and financial aspects, concession contracts or delegation agreements must establish: control conditions; oversight and penalties for non-compliance; the terms of the reversion of assets and services; the rights and obligations of concessionaries; the rights and responsibilities of institutions that sign cooperation agreements; cases of extension and expiration of terms; and mechanisms and criteria of payments to the party providing the services.

4.8 A cooperation agreement was signed among the State of Minas Gerais, the Municipality of Belo Horizonte, COPASA and SUDECAP, in March 2003, for sharing the management of water and sewage systems in Belo Horizonte. The Agreement: (i) defines that COPASA will have the responsibility for operating the collection, water treatment and final treatment of sewage systems; and (ii) establishes the shared responsibility of COPASA and SUDECAP to implement the Management Plan (MP) for supplying the services and monitor the evolution of quality and costs of the services. Investments in the municipal water and sewage systems must be done in agreement with the priorities defined in the MP, following the municipal sanitation policies.

4.9 Tariffs will be set and adjusted by a State Law with approval from the Municipality. The decree 11289 created the Municipal Sanitation Fund, and the Municipal Sanitation Council (COMUSA). COMUSA analyzes and gives an opinion on tariffs for water, sanitation services and their adjustments and revisions. Income from tariffs will be distributed 4% to SUDECAP and 96% to COPASA. SUDECAP's share will be paid to the Municipal Sanitation Fund, based on regulations to be issued in a Municipal decree. The internal regulations for COMUSA have not been yet approved and its members have not yet been formally appointed. **Prior to first disbursement, the Bank will require evidence that the Municipal Sanitation Fund has been implemented and COMUSA has been established.**

D. Companhia de Saneamiento do Estado de Minas Gerais (COPASA)

1. Legal and organizational characteristics

4.10 COPASA is a mixed-property public-private corporation, created in the State of Minas Gerais by State Law 6475/74. This mixed-property corporation is in charge of all water and sanitation services in the State. To discharge its functions, COPASA may develop studies and projects, as well as build and operate the respective systems. The shareholders Assembly, the Administration Council and the Directorate, manage COPASA.

4.11 COPASA is organized along the lines of a private corporation. The seven persons Administration Council is appointed by the Assembly, for a two-year period. One of the seven Council members represents the municipalities in the State. The Directorate performs the executive functions, and it is integrated with five area directors (operations, technology and development, business, works and financial-administration). COPASA directly employs 10,123 workers[6].

4.12 COPASA main operational indicators for 2003 are reported in the following table, where they are compared to similar data for the city of Belo Horizonte:

Operational Performance Indicators at COPASA and Belo Horizonte Compared

Performance indicator	Belo Horizonte	COPASA
Population serviced (million person)	2.4	10.6
Drinking water coverage (%)	98.6	96.44
Sewage coverage (%)	90.77	81.03
Water sewage treated (%)	47.00	34.8
Micro measurement index (%)	99.92	99.92
Own employees per thousand customers	N/A	3.65
Water not accounted for (%)	30.22	24.8

4.13 In addition to operating the water and sanitation systems, COPASA sets the prices and the quality standards for the respective services. The State has not yet initiated any action to separate the regulation, operation and control functions for water and sanitation services, claiming that the lack of a national legal framework creates uncertainty for the sector organization in the State.

4.14 COPASA operates in the 593 municipalities that exist in the State. In most cases, the operation is limited to areas where the municipal authority is located and/or larger localities. The Constitution of the Republic clearly establishes that sanitation services are the responsibility of respective municipalities, with the exception of metropolitan areas. Thus, COPASA operates the services under a concession contract with the municipalities. Most of these contracts have already finished their first contract and have been successfully renovated. In the specific case of Belo Horizonte, the contract has been extended for two years, due to the strategic importance and the ownership problems in metropolitan areas. The new contract was signed on March 2003 (¶4.9). In addition to this, the municipality of Belo Horizonte has been authorized by municipal Law 8754/04 to sell to COPASA the entire water and sewage network in the city, which has been valuated at R$278 million. About R$240 million will be paid in COPASA shares, and the Belo Horizonte municipality will approximately own 10% of COPASA's capital, and will be able to participate in the Administration Council.

[6] As of December 2003.

4.15 A mechanism of community organizations has been developed to service minor localities within the concession area. These community organizations are technically supported by COPASA and they get financial support from the State for the construction of new systems.

2. Tariffs and tariff collection

4.16 COPASA tariff structure has four main user categories (residential, industrial, business and public). Users are billed monthly and the tariff is a progressive one, based on consumption levels that start with a minimum of 10 or 15 m³ (depending on whether the costumer is considered "social" or "semi-social"). The last time that COPASA reviewed its tariffs was on February 28th, 2004. Current tariffs have been effective since March 1st, 2004.

4.17 Main financial indicators for COPASA are as follows: (i) average tariff is R$1.27/m³. This tariff generates revenue that covers 158% of operational and maintenance costs (or 127%, if depreciation costs are included), and the collection is 96% of total net billing; (ii) the long-term debt ratio is 35.9%. Debt is mainly from loans with the National Treasury and, to a lesser extent, with the *Caixa Económica Federal* and the Minas Gerais Development Bank.

4.18 The tariffs and coverage ratios generated a 2003 positive operational surplus, in the amount of R$405.6 million. After financial costs, depreciation and changes in the rate of exchange are taken into account, the net surplus was R$94.1 million.

3. Financial situation

4.19 COPASA reported net results of R$(89.9) million in 1992 and R$94.1 million in 2003. Losses in year 2002 resulted from: (i) adverse effects from the devaluation of the real (42% of the debt is in foreign currency); and (ii) service tariffs that remained unchanged from January 2001 until January 2003. The substantial improvements exhibited in 2003 result from the implementation of a strategic plan, which was developed through a participatory process. Seventeen actions proposed in the plan were implemented during 2003, including: (i) establishment of procedures for the renewal of concessions that had expired, and to obtain new concessions. The new concessions, in addition to the network expansion (1,090 km. in water and 439 km. in sewage), allowed COPASA to increase the number of municipalities and localities with concession contracts, and localities where it operates. The number of customers was thus increased (1.97% in water services and 2.36% in sewage); (iii) the reevaluation of the tariff model and the adjustment of tariffs, which resulted in the average tariff increasing from R$1.01/m³ to R$1.27/m³; and (iii) establishment of a loss-reduction program, which attained a reduction from 4.17% to 3.19% in the percentage of overdue payments.

4.20 COPASA's ability to service the debt and timely comply with all its financial commitments is summarized in the following table COPASA's tariffs have been generating enough income for the timely payment of operational and maintenance

costs, to cover interest and principal payments on its debt and to generate a surplus for its investments.

COPASA's capability to generate a cash surplus (MM' R$)					
	1999	**2000**	**2001**	**2002**	**2003**
Income	679.5	679.1	750.5	735.5	988.0
Operational Costs	(413.0)	(454.1)	(555.8)	(600.4)	(700.7)
Financial expenditures	(48.9)	(74.4)	(63.8)	(64.8)	(125.1)
Surplus/Deficit	**217.6**	**150.6**	**130.9**	**70.3**	**162.2**

4.21 Total investment has been R$216.1 million in 2002 and R$192.7 million in 2003. These investments have mostly been financed with COPASA's own resources.

V. VIABILITY AND RISKS

A. Technical Viability

5.1 The works to be financed under this Program do not involve any special technical difficulties in terms of either construction or operation, since the technologies considered are widely used in water supply and sanitation services. Their sizing was based on studies that ensure great security, and the construction technology to be used will provide economic and construction work advantages.

5.2 Regarding the preparation status of the designs of the Program's works, there are sufficiently developed engineering studies with acceptable cost estimates prepared in accordance with generally accepted engineering standards and principles. The designs represent least-cost alternatives that are technically viable and have been technically tested in similar conditions in the country. The budgets have the appropriate backup and details. The projects in the first group, to be executed at Program start-up, have the corresponding executive designs. Preliminary designs are available for the remaining works (i.e., in groups II and III), having included in the Program's budget, resources to contract, within the first year, consulting services to prepare project designs with the necessary details to call for bids and execute.

5.3 Concerning Program execution, the schedule fairly reflects the times needed to perform planned activities. The schedule was prepared taking into account the characteristics of the works, the time to process pre-qualifications and bids, and the MBH and COPASA experience with the execution of similar projects.

B. Institutional Viability

5.4 The institutional viability of the Program was analyzed from the standpoint of MBH's and COPASA's capacity to execute the Program's works, as well as to operate the systems upon completion of the construction phase.

5.5 COPASA has experience in the execution of World Bank financed projects (Water quality control and pollution levels, 1992). There is a COPASA unit that has been satisfactorily performing Program preparation activities. Regarding systems operations, COPASA is adequately operating and maintaining existing systems, as measured by management indicators presented in the previous chapter. Based on this experience, it is estimated that COPASA has enough capacity to operate and maintain the systems financed by the Program.

C. Financial Viability

5.6 The financial viability of the Program was analyzed, on the one hand, from the standpoint of MBH's capacity to take on the loan and service the corresponding

debt; an, on the other hand, form the standpoint of COPASA's and MBH's capacity to assume the local counterpart contributions, and on MBH's capacity to extend the counter guarantee required by the Federal Government in exchange for its guarantee for the Bank loan.

1. MBH borrowing capacity

5.7 MBH is the borrower in this operation. The following projections, in R$ million, have incorporated the fact that MBH has signed a new Cooperation Agreement to provide water and sanitation services with the State's government, and with COPASA. This Cooperation Agreement establishes that COPASA must transfer, during a 24 years period, resources in the amount of R$ 170,0 million indexed to the General Index Price. The transfer of resources will start in January 2008.

5.8 The current revenues and expenditures for fiscal year 2004 were taken from the proposed Budget Law of 2004. For 2005 and later years, a 9% and 8% annual growth were considered for own revenues and transfers, respectively. Current expenditures were based on 6% annual growth rate up to 2005 and 9% for the following years.

MBH Borrowing Capacity										
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Current Income	2,586.1	2,806.4	3,045.6	3,305.2	3,587.1	3,898.4	4,230.5	4,591.1	4,982.6	5,407.6
Current expenses	2,210.2	2,342.8	2,483.3	2,706.8	2,950.5	3,216.0	3,505.4	3,820.9	4,164.8	4,539.7
Current Savings	**375.9**	**463.6**	**562.3**	**598.4**	**636.6**	**682.4**	**725.1**	**770.2**	**817.8**	**867.9**
Committed Investments	303.3	353.0	356.3	380.4	398.0	435.7	479.2	527.1	579.9	637.8
Debt Service	89.5	81.0	85.0	86.6	86.2	86.9	83.9	76.1	74.5	70.2
Capital Income	2.0	2.2	2.4	2.6	2.9	3.1	3.4	3.7	4.1	4.4
Surplus for investment	**(14.9)**	**31.8**	**123.4**	**134.0**	**155.3**	**162.9**	**165.4**	**170.7**	**167.5**	**164.3**

5.9 MBH's capacity to provide the counterpart of the Program and extend the counter guarantee to the Federal Government has been analyzed both legally (i.e., authorization to take on those commitments), and financially (i.e., capacity to generate resources).

5.10 With regards to the first point, the MBH has been regularly complying with the agreements included in the Fiscal Adjustment Program of the National Treasury. From financial standpoint, projections of MBH were done using the assumptions made in (¶5.8). As observed, financial projections show positive and growing current savings. After taking into account resources required to service debt and executed committed investments in health, education and financial investments, there will only be a need of some kind of financing to cover a deficit in 2004. In 2005 and later years there is enough current savings to cover financial obligations and local counterpart for the Program, as well as an additional surplus for investment and transfers. This analysis leads to the conclusion that MBH has the

capacity to provide the needed counterpart and the counter guarantee required by the Federal Government.

2. COPASA's capacity to make counterpart contributions for sanitation works

5.11 The following projections are based on an annual average increase of 2.82% for water users and 4% for drainage users. Income statement projections cover costs operations, maintenance costs and depreciation with income from services that fluctuate between 132% and 147% during the projected year. Every year, the flow of funds of the treasury are enough to cover costs of operations, maintenance, and debt service. The flows are stable and increasing during the project's execution period. The surplus for investments generated in the treasury is large enough to cover the investments that must be financed with own resources.

COPASA Income Statement

($R million)

	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Operating Revenue	1,702	2,067	2,403	2,719	2,992	3,332	3,717	4,149	4,596	5,142
O&M Costs	(1,160)	(1,340)	(1,518)	(1,689)	(1,852)	(2,046)	(2,263)	(2,504)	(2,759)	(3,057)
Operating Income	**542**	**727**	**885**	**1,030**	**1,140**	**1,286**	**1,454**	**1,645**	**1,837**	**2,085**
Depreciation	(134)	(162)	(195)	(240)	(270)	(287)	(319)	(353)	(392)	(434)
Loan loss provisions	(57)	(68)	(83)	(96)	(109)	(120)	(133)	(149)	(166)	(184)
EBIT (1)	**351**	**497**	**607**	**694**	**761**	**879**	**1,002**	**1,143**	**1,279**	**1,467**
Financial income/(expenditures)	(135)	(164)	(276)	(453)	(538)	(487)	(532)	(552)	(550)	(498)
EBT (2)	**216**	**333**	**331**	**241**	**223**	**392**	**470**	**591**	**729**	**969**
Taxes	(54)	(83)	(83)	(60)	(56)	(98)	(117)	(148)	(182)	(242)
Net Income	**162**	**250**	**248**	**181**	**167**	**294**	**353**	**443**	**547**	**727**
O&M+D Coverage	132%	138%	140%	141%	141%	143%	144%	145%	146%	147%

(1) Earnings befote interests and taxes

(2) Earnings before taxes

COPASA Capital Adequacy ($R million)										
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Collections	1,600	1,941	2,266	2,572	2,839	3,158	3,522	3,931	4,358	4,871
Payments for O&M costs	(807)	(1,284)	(1,461)	(1,636)	(1,801)	(1,985)	(2,196)	(2,429)	(2,679)	(2,964)
Debt servicing	(329)	(266)	(360)	(378)	(336)	(337)	(378)	(378)	(404)	(413)
Surplus for investment	**464**	**391**	**445**	**558**	**702**	**836**	**948**	**1,124**	**1,275**	**1,494**
Collections / O&M+DebtServ	1.41	1.25	1.24	1.28	1.33	1.36	1.37	1.40	1.41	1.44

D. Socio-environmental viability

1. Positive Impacts

5.12 The Program internalizes the socio-environmental dimension from its inception. To improve living conditions, the Program transforms treatment of drainage in the watershed in an additional urban element with multiple investments to improve: drainage, sewage, roads, recreation and protection areas, social mobilization and population resettlement. The Program actions lead to the environment rehabilitation and conservation, especially of water resources which will be benefited through actions directed at recovering the water flow paths in Belo Horizonte. The evaluation of probable positive and negative impacts associated to the Program's actions indicates that, for the most part, the socio-environmental impacts are positive.

5.13 Regarding its environmental dimension, the Program will have a positive impact on the condition of waterways, which currently receive untreated effluents. Several additional environmental benefits foreseen as a result of the Program implementation can be: erosion control in river basins; improvements of flows in waterways; creation of green areas and reestablishment of protected areas; improvements in solid waste collection; and flood preventions. Social mobilization and environmental sanitary education are Program actions that should lead to improved awareness of the Program watershed's residents who participate all along the Program's preparation and implementation. The population resettlement and the protection of watersheds will allow the streams' hydrological regime to freely fluctuate, avoiding flood effects (e.g., erosion and sediment accumulation). Additionally, reforestation will help improve the green areas indices in the Municipality.

5.14 In the long term, the proposed actions will promote the re-qualification of affected areas, which will result in improved real estate values. This will stimulate construction and housing improvements, changes of soil use and population density, as well as better use of protected areas.

5.15 Strengthening of environmental management in the SMMAS will contribute to improve the efficacy in the provision of services, particularly in monitoring water quality, environmental information services and management of Municipal protected areas.

2. Negative Impacts

5.16 Most of the negative impacts, whether social or environmental, relate to the implementation of the civil works.

5.17 In terms of environmental dimension, the Program impact during construction work should be low to moderate in magnitude, temporary and localize, and can be avoided or controlled by means of appropriate mitigation measures. In terms of its social dimension, the most significant negative impact revolves around the need to expropriate or clear areas to build infrastructure. The mandatory resettlement of 1,365 families could cause some social disarticulation of communities. A Resettlement Plan has been developed in order to mitigate such social impacts. This plan was developed with the participation of those directly affected and in accordance with the Bank's policy. The intensive mobilization and social communication Program seeks to minimize possible social tensions through permanent participation and consultations with target population, and through the approval and compliance of the Plan. Compliance to the Plan by 98% of the affected families in the three watersheds, during the first year, will be an indicator that the process has been well implemented.

5.18 In light of the magnitude of the works contemplated in the Program, it can be inferred socio-environmental impact can be avoided or appropriately addressed. The socio-environmental viability of the Program is fully met both due to the Program's concept, as well as the mitigation and compensation measures already defined in the Social and Environmental Management Plan (PGAS). In addition, the eligibility criteria and guidelines for project environmental evaluation and control included in the Program's Execution Manual are sufficient to mitigate any future negative impact.

3. Consultations with affected communities and beneficiaries

5.19 Social participation in Belo Horizonte is an internalized process of the municipal public administration since 1993, when several popular participation forums were created. The most relevant participation entities in the Program are: Participatory Budget (PP), Housing PP, Municipal Conference of Urban Policy, Municipal Conference of Housing, and an wide structure of thematic councils that fulfill an institutional role in the social control of public policies. In addition, several civil society organizations participate in the social participation process. The formulation of the DRENURBS Program was carried out through open mobilization and popular participation process. That process was based on the existing institutional and organizational structure within the Programa's secondary watersheds.

5.20 For the Program as a whole, during 2001 and 2002, presentations/discussions were carried out with municipal councils, popular participatory regional consultative councils, NGOs, and regional monitoring and participatory oversight commissions. During the same period, the Program's project concepts were presented to all beneficiary communities. In 2003, the more intensive mobilization and communications activities of the Resettlement Plan were started. During Program preparation, there have been: a public hearing, and several consultation meetings with Belo Horizonte's communities. The main topics of discussions during these meetings were: the compensation strategy, eligibility criteria, and the resettlement mechanism. The results of the meetings suggest a general acceptance of the Program by the communities, with certain concerns regarding future needs of relocation. The level of acceptance beneficiaries within the watersheds selected for first year interventions is very high.

5.21 On March 11th 2003, a public hearing was held to discuss the environmental permitting process. The Program's EIA/RIMA was made available to the public in the city of Belo Horizonte in June 2003 and through the Bank's PIC in July 2003 (headquarters and Brasil's Country Office).

E. Socioeconomic Viability

5.22 A socioeconomic evaluation was carried out for each project in the secondary watersheds of *Bonsucesso*, *Baleares* and *1º de Maio*. The evaluation was based on comparison of economic costs and benefits with and without the project scenarios. The Program comprises four types of projects: drainage, roads, sewage and social use areas. The benefits were calculated using contingent valuation methods, which provided Willingness to Pay (DAP) estimates for each of the components. The evaluation considered incremental investment, operations, and maintenance costs, using efficiency prices.

5.23 A set of alternatives of drainage projects was analyzed. This helped to determine that the proposed solutions represent minimum economic cost alternatives, including the type of investment and optimum recurrence period. The benefit-cost analysis of the projects' components concluded that Willingness to Pay (DAP) for the drainage, sewage, roads and social use areas components have internal rates of return greater than 12%.

Socioeconomic Evaluation							
Watershed	Beneficiaries (Families) 2004	ENPV (US$ thousands)				IRR	Total/Inv. Family (US$)
		Benefits	Investment	Annual Costs	Net Benefits		
DRAINAGE							
Bonsucesso	12,265	7,367	6,027	328	1,012	16%	786
Baleares	1,091	784	644	46	94	17%	817
1º Maio	1,837	1,250	877	60	314	23%	771
ROADS							
Bonsucesso	12,265	8,738	7,947	148	642	14%	945
Baleares	1,091	930	662	148	119	22%	964
1º Maio	1,837						
SEWERAGE							
Bonsucesso	12,265	2,794	1,145	67	1,582	37%	168
Baleares	1,091	297	210	14	74	23%	276
1º Maio	1,837	474	208	16	250	41%	148
PUBLIC AREAS							
Bonsucesso	12,265	5,299	4,498	141	661	16%	553
Baleares	1,091	564	315	183	66	23%	424
1º Maio	1,837	899	564	15	321	28%	417

5.24 A sensitivity analysis of benefits and costs was carried out. The analysis showed that the viability results are robust, except for the roads component in *Bonsucesso*. However, it must be considered that the analysis performed is conservative considering that for the economic analysis, besides direct costs, investments include: purchase of land, removal of families from risky areas, construction of houses for those families, and a 10% value of the works investments for incidental expenditures. In addition, benefits due to increase traffic flows, due to improved neighborhood access, were not included in the analysis of the road investments in the specific case of *Bonsucesso*.

5.25 Based on the analysis of these projects and other proposed investments, maximum amounts of investment per family were included in the Regulations Manual, as socio-economic eligibility criteria of projects. Although investments are targeted to less developed areas of Belo Horizonte, based on income profile, only 35% of the Program's beneficiaries are below the poverty line. Therefore, the Program does not qualify as PTI. With regards to the capacity to pay of those families that must be connected to the sewage system, it was found, using the survey data, that COPASA's social tariff does not even amount to 5% of the mean average family income. This leads to the conclusion that it is economically feasible to make the required connections.

F. Benefits

5.26 The primary benefit of the Program is to eliminate or reduce damage to community, private and public infrastructure due to floods produced because of the intense rainfalls of greater frequency in Belo Horizonte. This improvement leads to a better quality of life for the population, because it improves housing conditions in the areas of influence of the eight streams where the Program intervenes, and because it improves sanitary conditions due to better conduction of sewage to treatment plants. The increment in sanitation services will benefit more than 5.500 families. Improvements in sanitary conditions will contribute to reduce incidence of waterborne diseases, with corresponding improvements in family health, especially among the poorest families who currently live in deteriorated urban conditions. During works construction, employment opportunities will be created. Other social benefits include the insertion of resettled population in the regular urban structure of the city and the creation of new recreation alternatives in unused areas in the secondary watersheds. The Environmental Management component will ensure both: sustainability of the quality levels reached, and progressive improvements for that should place MBH in a good position to take on future projects. It is expected that these direct benefits among the Program's beneficiaries will improve the environmental health of the population.

G. Risks

5.27 The Program presents the following risks: (i) unforeseen floods due to deficiencies in the planning and management of the urban drainage and maintenance of the regulation and control structures of the waterways. The current operation will mitigate this risk by implementing an urban drainage management model, based on the development of mathematical models and hydrological monitoring, as well as the technical training of MBH's technical staff; (ii) reoccupation of the expropriated areas next to the streams. This risk will be mitigated with the implementation of green areas with recreation infrastructure in unused areas next to the streams, and permanent social mobilization actions; and (iii) inadequate solid waste disposal because of lack of participation and collaboration of residents. This risk will be mitigated with the implementation of specific sanitary and environmental education and social mobilization programs.

BRAZIL

BELO HORIZONTE ENVIRONMENTAL RESTORATION PROGRAM (BR-0397)

LOGICAL FRAMEWORK

<table>
<tr><th>NARRATIVE SUMMARY OF OBJECTIVES</th><th>INDICATORS</th><th>MEANS OF VERIFICATION</th><th>ASSUMPTIONS</th></tr>
<tr><td colspan="4">GOAL</td></tr>
<tr><td>Improve living conditions of Belo Horizonte's inhabitants</td><td>Increase the level of current Índice de Salubridad (ISA)[1] actual for the population in the secondary watershed areas of the following streams:
<table>
<tr><th>Secondary watershed</th><th>2003</th><th>2008</th></tr>
<tr><td>1 de Maio</td><td>0.90</td><td>0.94</td></tr>
<tr><td>Engenho Nogueira</td><td>0.74</td><td>0.92</td></tr>
<tr><td>Terra Vermellha</td><td>0.66</td><td>0.91</td></tr>
<tr><td>Bonsucesso</td><td>0.74</td><td>0.92</td></tr>
<tr><td>Na. Sra. Piedad</td><td>0.88</td><td>0.96</td></tr>
<tr><td>Piteiras</td><td>0.88</td><td>0.94</td></tr>
</table></td><td>Periodic reports of the Municipal Sanitation Council (COMUSA) of PMBH</td><td></td></tr>
<tr><td colspan="4">PURPOSE</td></tr>
<tr><td>Improve health and environmental conditions of inhabitants in the Program's secondary watersheds of the Program</td><td><u>Eliminate flood problems that currently register 12 points or stretches</u>
<table>
<tr><td>Secondary Watershed</td><td colspan="2">Flood Stretches</td></tr>
<tr><td></td><td>2003</td><td>2008</td></tr>
<tr><td>1 Maio</td><td>1</td><td>0</td></tr>
<tr><td>E. Noguiera</td><td>2</td><td>0</td></tr>
<tr><td>Bonsucesso</td><td>6</td><td>0</td></tr>
<tr><td>N.S.Piedade</td><td>2</td><td>0</td></tr>
<tr><td>Piteiras</td><td>1</td><td>0</td></tr>
</table></td><td>Civil Defense Coordinator records.</td><td>There are no damages due to unforeseen floods.

The expropriated areas next to the streams are not occupied again.

The maintenance and control of stream waterways and the structures built are adequate.</td></tr>
</table>

[1]Environmental Health Index (ISA) established by the PMBH. It evaluates indexes and indicators related to the coverage of services to the population like water sanitation, solid waste recollection; and to the conditions of urban drainage, vector control and environmental health.

<table>
<tr><th>NARRATIVE SUMMARY OF OBJECTIVES</th><th>INDICATORS</th><th>MEANS OF VERIFICATION</th><th>ASSUMPTIONS</th></tr>
<tr><td></td><td>Interception of the contaminant discharge in the waterways in the amount of 4670 kg/DBO/day in year 2008
<table>
<tr><td>Secondary watershed</td><td>DBO removed Kg/day</td></tr>
<tr><td>1° Maio</td><td>160</td></tr>
<tr><td>Engenho Nogueira</td><td>1,050</td></tr>
<tr><td>Baleares</td><td>200</td></tr>
<tr><td>Terra Vermelha</td><td>700</td></tr>
<tr><td>Bonsucesso</td><td>1,850</td></tr>
<tr><td>M. C. Valadares</td><td>280</td></tr>
<tr><td>N.Sra.Piedade</td><td>360</td></tr>
<tr><td>Piteiras</td><td>70</td></tr>
<tr><td>Total</td><td>4,670</td></tr>
</table></td><td>Monitoring of water quality carried out by COPASA</td><td>There are no clandestine residual water disposals in receiving bodies of water.</td></tr>
<tr><td></td><td>• Reduction or irregular solid waste disposal from 500 m^3/year in 2003 to less than 100 m^3/year in 2008</td><td>Records of SLU</td><td>Population does no disposes of solid waste in the waterways.

SLU increases solid waste collection service coverage in new areas with access.</td></tr>
<tr><td colspan="4">PRODUCTS</td></tr>
<tr><td>COMPONENT 1
Flood Risk Reduction</td><td></td><td></td><td></td></tr>
<tr><td>a) Drainage Works

b) Road works</td><td>• Control and improvement works have been implemented in 36.7 km of waterways, in the urban area of Belo Horizonte.

• 7.9 km of main collectors and drainage have been installed.

• Construction of 26.9 km or roads, within in the Program’s geographic area.</td><td>Bi-annual Program execution progress reports - MBH</td><td>Maintenance and control of streams’ waterways and structures built are adequate.

There is municipal road plan that integrates the proponed roads to municipal procedures of traffic</td></tr>
</table>

NARRATIVE SUMMARY OF OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
c) Parks and social use areas **d)** Involuntary resettlement	• Implementation of 13.4 km^2 of linear parks along the waterways. • Implementation of 91.6 ha of social use areas (plazas, courts, games, service sheds) • Re-vegetation of 13.7 ha. in the secondary watersheds of M. C. Valaldares y Piteiras • Monitored resettlement of 314 families. Construction of 681 housing units. Expropriation of 314 properties.	Oversight reports and SCOMURBE / PEU	regulation, use and maintenance. Municipality controls the use and maintains community green areas.
COMPONENT 2 **Improve quality of the waterways**			
a) Increase the sewage system	• Number of household connections implemented:: 5.380 units • Length of sewage collectors: Total: 54.7 km • Length of marginal interceptors in the streams: Total: 31.4 km	Bi-annual Program execution progress reports - PMBH	There are no clandestine sewage disposal in the waterways.

NARRATIVE SUMMARY OF OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
COMPONENT 3 **Improve Urban and Environmental Management**			
a) Drainage system management **b)** Socio environmental management **c)** Health and environmental management	• Hydrological Model Implemented by 2007 • Watershed committees trained on water resources management • Water quality monitoring system implemented by 2006 • Effective incorporation of community proposals in Municipal Planning. • Studies have been carried out and planned activities have been started. • 60 community agents trained to manage the implemented areas • 170 meetings and events for environmental training carried out • 13.900 children educated on environmental valuation.	Bi-annual Program Progress reports - PMBH	The PMBH conforms a professional team to plan and start-up the projects; personnel assumes its functions with responsibility and there is political will to support the activities.

TENTATIVE PROCUREMENT SCHEDULE

ITEM	NÚMBER OF CALLS FOR BIDS	TOTAL COST (MM US$)	FINANCING		TYPE OF BIDDING[1]	QUARTER OF PUBLICATION
			BID	LOCAL		
1 Works	**3**					
Group I						
Drainage works, sewage and urban planning of the Baleares watershed	1	2.019	1.906	113	ICB	IV 03
Drainage works, sewage and urban planning of the Primeiro de Maio watershed	1	1.851	1.759	92	ICB	IV 03
Drainage works, sewage and urban planning of the Bonsucesso watershed	1	22.337	20.631	1.706	ICB	IV 03
Group II						
Drainage works, sewage and urban planning of the Engenho Nogueira watershed	1	7.153	6.438	715	ICB	III 04
Drainage works, sewage, urban planning and housing units of the Nossa Senhora da Piedade watershed	1	2.164	2.027	137	ICB	III 04
Group III						
Drainage works, sewage, urban planning and housing units of the Terra Vermelha watershed	1	2.068	1.880	188	ICB	IV 05
Drainage works, sewage, urban planning and housing units of the Maria Carmen Valadares watershed	1	1.246	1.163	83	ICB	IV 05
Drainage works, sewage, urban planning and housing units of the Piteiras watershed	1	1.390	1.320	70	ICB	IV 05
2 Goods						
Equipment PEU	1	55	0	55	LCB	IV 03
Furniture PEU	1	25	0	25	LCB	IV 03
3 Services						
Consulting services to support Program Execution	1	780	780	0	ICB	IV 03
Consulting services to support oversight of works	1	2.100	2.100	0	ICB	IV 03
Mathematical model for the drainage system	1	100	50	50	LCB	IV 03
Consulting services to prepare executive designs of projects	1	2.500	0	2.500	LCB	IV 03
Program Auditing	1	150	0	150	LCB	III 04
Group II						
Hydrological Monitoring	1	1.000	1.000	0	ICB	IV 03
Expansion of the integrated geo-referenced information systems	1	184	92	92	LCB	IV 03
Water quality monitoring	1	100	50	50	LCB	IV 03
Technological/education continued in environmental management and urban drainage	1	200	0	200	ICB	IV 03
Environmental education	1	400	0	400	ICB	III 03
Urban drainage management model	1	100	50	50	LCB	III 03
GIS for environmental management	1	250	125	125	ICB	IV 03
Program Monitoring and evaluation system	1	200	200	0	ICB	III 03
TOTAL		**48.372**	**41.571**	**6.801**		

ICB: International Competitive Bidding
LCB: Local Competitive Bidding

[1] In Local Competitive Bidding should be included all the bidding forms allowed the country's procurement laws.